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Cosmological evolution of a ghost scalar field

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Abstract

We consider a scalar field with a negative kinetic term minimally coupled to gravity. We obtain an exact non-static spherically symmetric solution which describes a wormhole in a cosmological setting. The wormhole is shown to connect two homogeneous spatially flat universes expanding with acceleration. Depending on the wormhole's mass parameter m the acceleration can be constant (the de Sitter case) or infinitely growing.

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Keywords

De Sitter space-time, Gravity, Scalar field